

**What is claimed is:**

1. An apparatus for creating and transmitting a data signal containing a plurality of bytes through a communication medium to a receiving device, said transmitter comprising:

means for parsing said plurality of bytes into at least one frame, said at least one frame containing a subset of said plurality of bytes;

computing means for determining over said subset a checksum value uniquely identifying said subset;

means for providing an integrity element for said subset;

means for embedding said checksum value into said integrity element;

means for placing said integrity element around said at least one frame such that said integrity element encapsulates said at least one frame and can be used to determine if said subset arrived at said receiving device substantially intact, said at least one frame and said integrity element together forming a broadcast signal; and

means for transmitting said broadcast signal to said receiving device;

whereby said data signal is transmitted through said communication medium to said receiving device.

2. The apparatus of claim 1 wherein said integrity element further comprises:

a size value for said at least one frame, said size value being used in computing said checksum value;

an operator identifying a mathematical operator used to compute said checksum value; and

Sw  
as

a seed value, said seed value being used in conjunction with said operator and said subset to determine said checksum value.

3. The apparatus of claim 1 wherein said data signal is comprised of an XML element.

4. The apparatus of claim 3 wherein said broadcast signal is transmitted as a diffuse infrared signal.

5. An apparatus for receiving and utilizing a data signal having a plurality of bytes comprising:

means for detecting a frame and an integrity element;

means for separating said frame and said integrity element to obtain a separated

5 integrity element;

means for determining contents of said separated integrity element; and

means for utilizing said contents for testing the validity of said frame.

6. The apparatus of claim 5 wherein said integrity element contains a checksum value computed over said plurality of bytes comprising said frame.

7. The apparatus of claim 6 further comprising means for validating said frame if said checksum value in said integrity element matches a second checksum value computed over said frame by said apparatus.

8. The apparatus of claim 6 further comprising means for invalidating said frame if said checksum value in said integrity element does not match a second checksum value computed over said frame by said apparatus.

9. The apparatus of claim 6 wherein said integrity element further includes:

a size for said frame, said size being used in the determination of said first checksum value;

an operator identifying a mathematical operator used in computing said first checksum value; and

a seed, said seed being used in conjunction with said operator and said frame to determine said first checksum value.

10. The apparatus of claim 5 wherein said data signal is a diffuse infrared signal.

11. The apparatus of claim 10 wherein said data signal is created by modulating an electric light.

12. A method of utilizing executable code in a source device, said method comprising the steps of:

parsing said plurality of bytes into a frame;

determining a checksum value over said frame;

providing an integrity element;

Sub  
cls

embedding said checksum value into said integrity element;  
encapsulating said frame within said integrity element containing said checksum  
value to produce a broadcast signal; and  
making said broadcast signal available to a transmitter for transmission to a  
10 handheld device through a communication medium.

13. The method of claim 12 wherein said frame is comprised of an XML element.

14. The method of claim 12 wherein said transmitter is a diffuse infrared transmitter.

15. The method of claim 12 wherein said integrity element further includes:  
a size for said frame, said size having been used in the determination of said  
checksum value;  
an operator identifying a mathematical operator used in computing said checksum  
5 value; and  
a seed value having been used in conjunction with said operator and said plurality  
of bytes making up said frame to determine said checksum value.

16. A method of utilizing executable code in a receiving device, said method  
comprising the steps of:  
receiving an incoming data stream comprised of a plurality of bytes organized  
into at least one frame having an integrity element associated therewith;

TO 5180 "4000E560

5 separating said integrity element from said at least one frame to produce a  
 separated integrity element;  
 reading a first checksum value from said separated integrity element;  
 computing a second checksum value from said plurality of bytes within said at  
 least one frame;  
 10 comparing said first checksum value to said second checksum value to determine  
 if there is a match therebetween; and  
 passing said at least one frame to a receiving module if said first checksum value  
 matches said second checksum value.

17. The method of claim 16 wherein said at least one frame is comprised of an XML  
 element.

18. The method of claim 16 further including:  
 after said comparing step, discarding said at least one frame if said first checksum  
 value does not match said second checksum value.

19. The method of claim 16 wherein said integrity element further includes:  
 a size for said at least one frame, said size being used in the determination of said  
 first checksum value;  
 an operator identifying a mathematical operator used in computing said first  
 5 checksum value; and

Sub  
als

a seed, said seed being used in conjunction with said operator and said plurality of bytes making up said at least one frame to determine said first checksum value.

20. A method for creating a data signal at a source device having a transmitter associated therewith, said method comprising the steps of:

parsing said data signal into a plurality of bytes;

grouping a subset of said plurality of bytes into at least one frame;

5 determining over said subset a checksum value uniquely identifying said subset;

providing an integrity element for said subset;

embedding said checksum value into said integrity element;

encapsulating said frame with said integrity element including said checksum value to form a broadcast signal; and

10 making said broadcast signal available to said transmitter for transmission to a receiving device through a communication medium.

21. The method of claim 20 wherein said integrity element further comprises:

a size for said at least one frame, said size being used in the determination of said checksum value;

an operator identifying a mathematical operator used to compute said checksum value; and

5 a seed, said seed being used in conjunction with said operator and said subset making up said frame to determine said checksum value.

09930004-031501

Sub  
615

22. The method of claim 20 wherein said data signal comprises an XML element.

23. The method of claim 21 wherein said transmitter is a diffuse infrared transmitter for transmitting a diffuse infrared signal.

24. The method of claim 23 wherein said diffuse infrared transmitter is a modulated electric light.

25. A method for receiving and utilizing a data signal having a plurality of bytes, said method comprising the steps of:

detecting an integrity element encapsulating said plurality of bytes, said plurality of bytes having been organized into a frame;

5 separating said frame from said integrity element to obtain a separated integrity element;

extracting the contents of said separated integrity element; and

utilizing said contents for testing the validity of said frame.

26. The method of claim 25 further comprising the step of validating said frame if said first checksum value in said separated integrity element matches a second checksum value computed over said plurality of bytes making up said frame during said utilizing step.

0930004-01501  
TOSTRO-10000000

Sub  
a5

27. The method of claim 25 further comprising the step of invalidating said frame if said first checksum value in said separated integrity element does not match a second checksum value computed over said plurality of bytes making up said frame during said utilizing step.

28. A computer-readable data signal for modifying the operation of a receiving device, said data signal comprising:

a frame containing at least a subset of a plurality of bytes, the contents of said frame for modifying said operation of said receiving device upon receipt and processing by said receiving device; and

an integrity element containing a first checksum value determined from said at least a subset of said plurality of bytes, said first checksum for validating the contents of said frame, said validating being successful if a second checksum value computed over said frame at said receiving device matches said first checksum value.

29. The computer-readable data signal of claim 28 wherein said integrity element is an XML element encapsulating said frame.

30. The computer-readable data signal of claim 28 wherein said integrity element further comprises:

a frame size value, said frame size value corresponding to the number of bytes in said frame that were used in computing said first checksum value;



5

a seed value, said seed value being used in determining said first checksum value;

and

an operator used in conjunction with said seed value to compute said first checksum value.

31. The computer-readable data signal of claim 26 wherein said contents of said frame include a broadcast XML element.